

GEOPHYSICAL VARIABLES AND BEHAVIOR: XXXIII. ONSETS OF
HISTORICAL AND CONTEMPORARY POLTERGEIST EPISODES
OCCURRED WITH SUDDEN INCREASES
IN GEOMAGNETIC ACTIVITY

LIVINGSTON GEARHART¹ AND

M. A. PERSINGER²

State University of New York at Buffalo

Laurentian University

Summary.—Several researchers have reported that poltergeist episodes frequently begin on the day (± 1 day) of a sudden and intense increase in global geomagnetic activity. To test this visual observation, a near-complete account of these episodes for which the inception dates were recorded and verified was examined. Statistical analyses clearly indicated that global geomagnetic activity (aa index) on the day or day after the onset of these episodes was significantly higher than the geomagnetic activity on the days before or afterwards. The same temporal pattern was noted for historical cases and for those that have occurred more recently. The pattern was similar for episodes that occurred in North America and in Europe. The results were statistically significant and suggest that these unusual episodes may be some form of natural phenomena that are associated with geophysical factors.

One of the conceptual expectations of geophysical epidemiology is that certain phenomena should be coupled to global changes in geomagnetic or tectonic activity. Persinger (1985) suggested that many types of phenomena that have been hereto labelled as "paranormal" may be associated with changes in the geophysical environment. One type of persistent phenomenon has been the poltergeist (Roll, 1978). It is associated with a variety of sounds, object movements, electromagnetic peculiarities, and unusual human behaviors. The onset and the development of the phenomenon display epidemiological features. Following a conspicuous onset, there is a sudden and exponential-like increase in the numbers of these events; then they cease, sometimes quite suddenly.

Persinger and Lafreniere (1977) noted that many of these odd events followed sudden increases in geomagnetic activity. Later it was noted that this idea had been developed as well by L. Gearhart but it had not been published. To determine whether a relationship between global geomagnetic activity and the onset of major poltergeist episodes was a robust effect, M.A.P. obtained the data base of L.G. These data had been collected over a 30-yr. period and have been verified by cross-referencing; they are also probably complete for this type of literature. A total of 40 cases were found that contained the *day* of the onset of the poltergeist episode between the years 1900 and 1967.

¹Professor Emeritus, Department of Music, Baird Hall, Buffalo, New York 14260, USA.

²Send requests for reprints to Dr. M. A. Persinger, Department of Psychology, Laurentian University, Sudbury, Ontario, Canada P3E 2C6.

The aa (average antipodal) index of Mayaud (1973) was selected since it is a global inference of geomagnetic activity that is complete for the years 1868 through 1967. The index contains values for northern and southern hemispheres and has been analyzed in depth. Because the 40 cases occurred in the northern hemisphere, daily aa values for this region were used. For each case, the aa values for the day of the onset of the poltergeist episode as well as for each of the seven days before and each of the seven days after the onset were recorded. They were transcribed and coded by an assistant who was not familiar with the hypothesis. Because heterogeneity of variance in aa values occurred between some days, Friedman's nonparametric analysis for repeated measures was selected to test the hypothesis.

Results for all 40 cases are shown in Fig. 1A. Poltergeist episodes (that contained reference to the date of inception) were more likely to have begun on or just before days when there was a sudden increase in geomagnetic activity compared to the seven days before the onset. Fig. 1A indicates that the average aa values were similar to baseline values by the fifth day after the beginning of the episodes. Friedman's analyses were statistically significant ($\chi^2 = 58.78$, $df = 14$, $p < .0001$). t tests for correlated data set at $p < .001$ were applied to the square root transformations (which minimized outlier effects) of the aa values; analyses indicated that only the day of the onset and the day after the onset were different statistically from the other days which were not different from each other.

We expected that not all reports of poltergeists would represent the general population of these events. Consequently only those cases that contained substantial descriptive detail and had been observed by multiple witnesses over several days were taken; 26 cases met these criteria. Half of these cases occurred before the year 1945 while the other 13 occurred between that year and 1967. Both groups were analyzed separately to determine the reliability of any geomagnetic pattern over time.

The mean aa values for the days before, during, and after the onset of the stronger poltergeist cases are shown in Fig. 1B (time frame constricted compared to Fig. 1A). Again, poltergeist episodes began on the day or day before a sudden increase in geomagnetic activity. Friedman's analyses were statistically significant ($\chi^2 = 63.50$, $df = 14$, $p < .00001$). The elevated activity returned to baseline levels within three or four days.

Comparisons of episodes that occurred earlier in the century with those that occurred between 1945 and 1967 showed that the pattern did not change substantially over time (Fig. 1C). Friedman's analyses for the earlier set of cases ($\chi^2 = 35.54$, $df = 14$, $p = .001$) and the more recent set of cases ($\chi^2 = 35.91$, $df = 14$, $p = .001$) were statistically significant and similar. The standard errors of the mean are not shown in Fig. 1C but ranged from 2.0 to 5.0

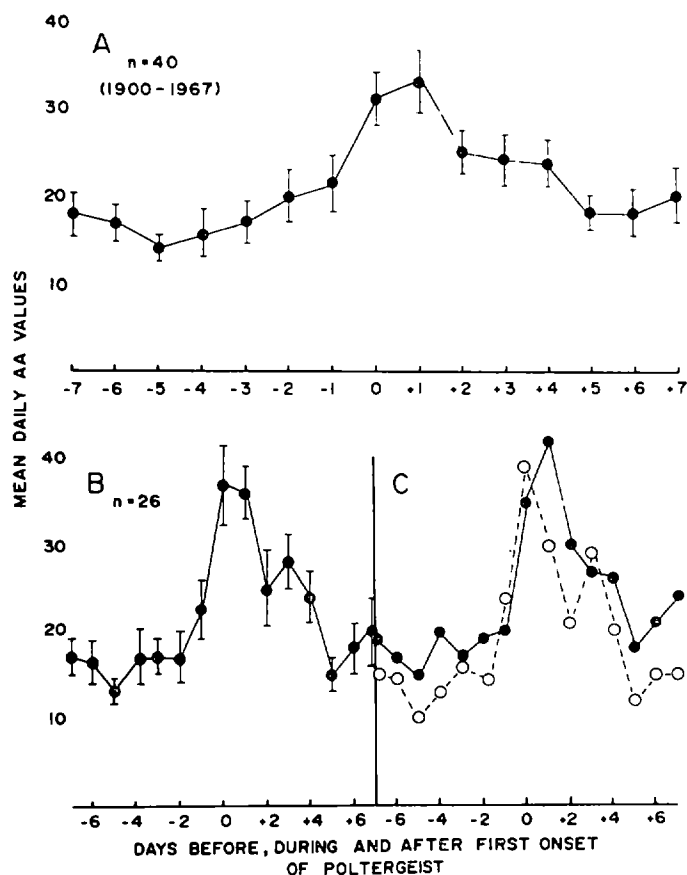


FIG. 1. Means and standard errors of the mean (± 1) for aa values (a measure of geomagnetic activity) in the northern hemisphere for days before, during, and after the onset of major poltergeist episodes. (A) The temporal pattern for all cases that have been reported that also contained the day of onset. (B) The temporal pattern for those cases that contained the greatest detail and strongest displays. (C) Comparison of episodes that occurred ($n = 13$, open circles) between 1900 and 1944 and those that occurred ($n = 13$, closed circles) between 1945 and 1967.

for all the days except for the conspicuous difference on day +1 where they were 5.7 and 6.8.

The results indicate a strong, statistically significant difference between geomagnetic activity on the day of or the day before inception of the most investigated (and published) poltergeist episodes, compared to other days before or after the onset. The effect is visually obvious even with case-by-case inspection. It is unlikely that the geomagnetic pattern reflects peculiarities of the sample because they are close to the total population of major cases with

published days of onset. The pattern is also consistent over time as indicated by the similarity and statistical significance of episodes that occurred before and after 1945. About half of the 40 cases occurred in Europe and India while the others occurred in the USA. Although we do not present the analyses here, there were no alterations in the pattern with respect to where the episodes occurred.

The mechanisms by which global geomagnetic activity might be related to poltergeist phenomena are not known. It should be remembered that geomagnetic activity and geomagnetic storms are general, often metaphorical labels applied to crude measures from magnetometers. There are a variety of direct and indirect geomagnetic stimuli coupled to these disturbances. No doubt there are also geomagnetic events not discriminated by instrumentation. Any mechanism that might be proposed to explain poltergeist phenomena must also accommodate how a geophysical stimulus in combination with a human being (Roll, 1974) might generate a poltergeist episode. Until the mechanisms are established, greater elucidation of these phenomena might be possible by subjecting them to the methodology of geophysical epidemiology.

REFERENCES

- MAYAUD, P. N. A 100-year series of geomagnetic data: indices aa and storm commencements. *LAGA Bulletin* 33. *International Union of Geodesics and Geophysics*. Paris, 1973.
- PERSINGER, M. A. Geophysical variables and behavior: XXII. The tectonic strain continuum of unusual events. *Perceptual and Motor Skills*, 1985, 60, 59-65.
- PERSINGER, M. A., & LAFRENIERE, G. F. *Space-time transients and unusual events*. Chicago, IL: Nelson-Hall, 1977.
- ROLL, W. G. *The poltergeist*. New York: Signet, 1974.
- ROLL, W. G. Poltergeist. In B. B. Wolman (Ed.), *Handbook of parapsychology*. New York: Van Nostrand Reinhold, 1978. Pp. 382-413.

Accepted January 13, 1986.